FIG. 1

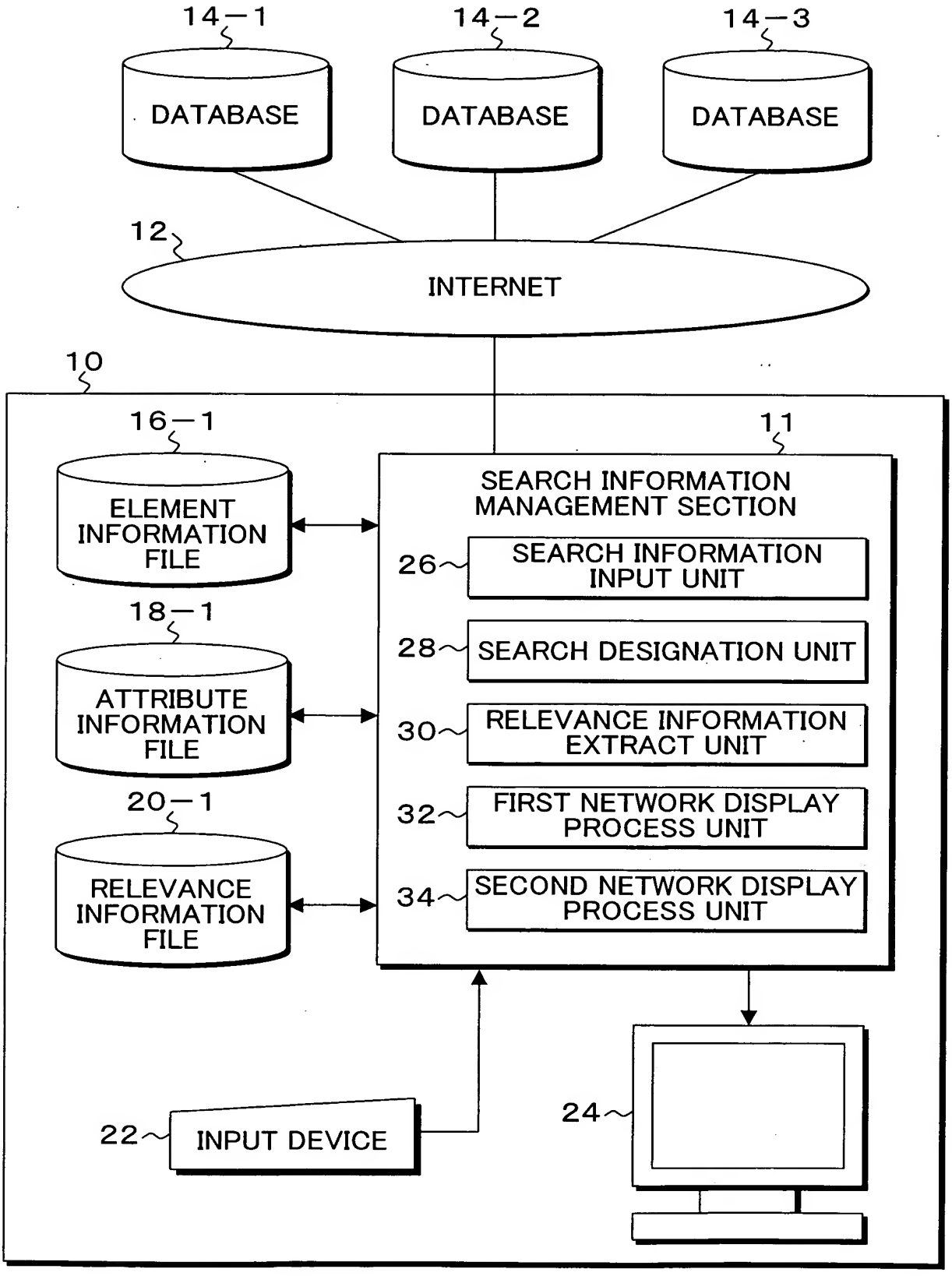

14-1
14-2
14-3
DATABASE
DATABASE
DATABASE
12
INTERNET
10
16-1
11
ELEMENT INFORMATION FILE
SEARCH INFORMATION MANAGEMENT SECTION
26
SEARCH INFORMATION INPUT UNIT
18-1
28
SEARCH DESIGNATION UNIT
ATTRIBUTE INFORMATION FILE
30
RELEVANCE INFORMATION EXTRACT UNIT
20-1
32
FIRST NETWORK DISPLAY PROCESS UNIT
RELEVANCE INFORMATION FILE
34
SECOND NETWORK DISPLAY PROCESS UNIT
22
INPUT DEVICE
24

FIG. 2

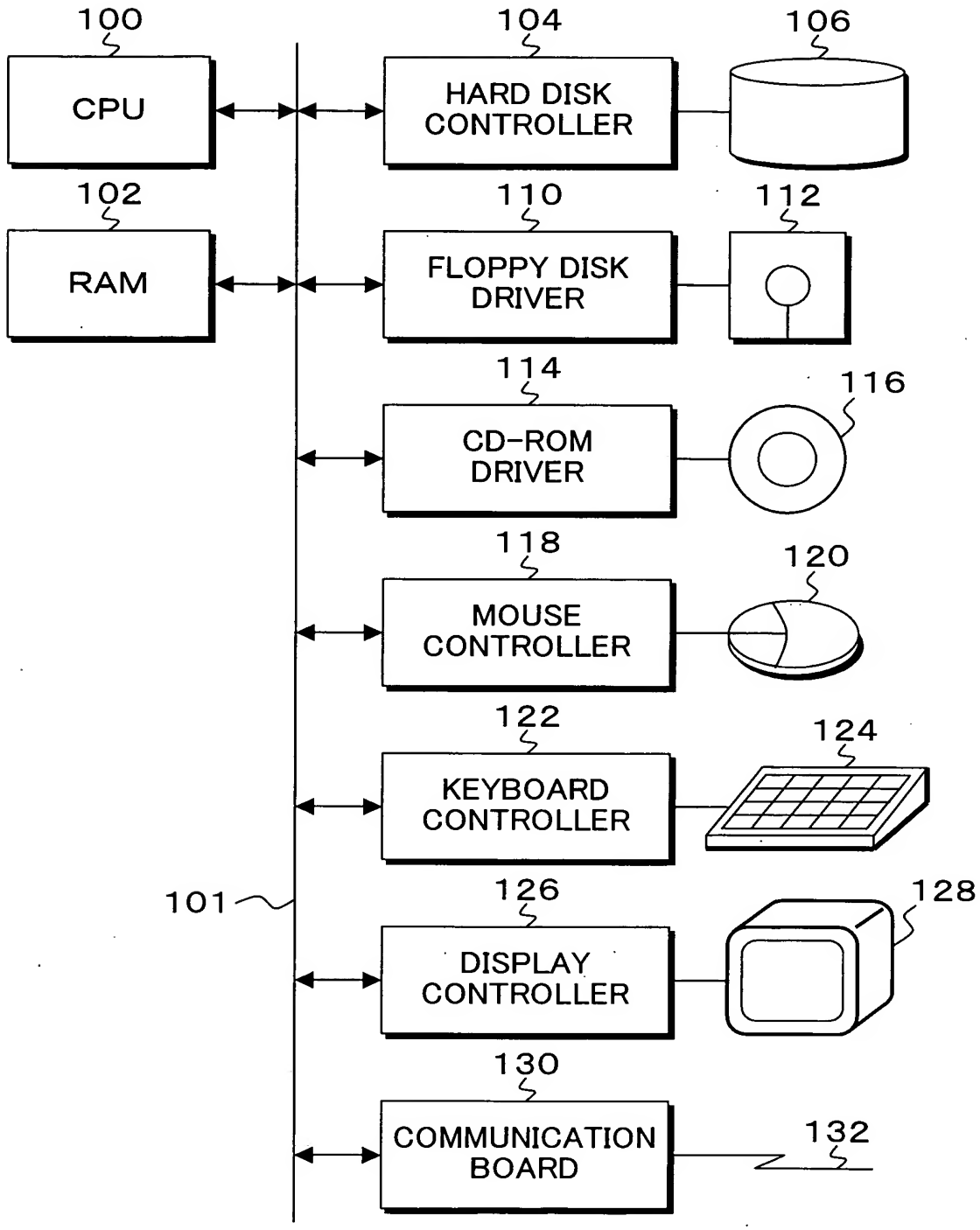

100
CPU
102
RAM
104
HARD DISK CONTROLLER
106
110
FLOPPY DISK DRIVER
112
114
CD-ROM DRIVER
116
118
MOUSE CONTROLLER
120
122
KEYBOARD CONTROLLER
124
101
126
DISPLAY CONTROLLER
128
130
COMMUNICATION BOARD
132

FIG. 3

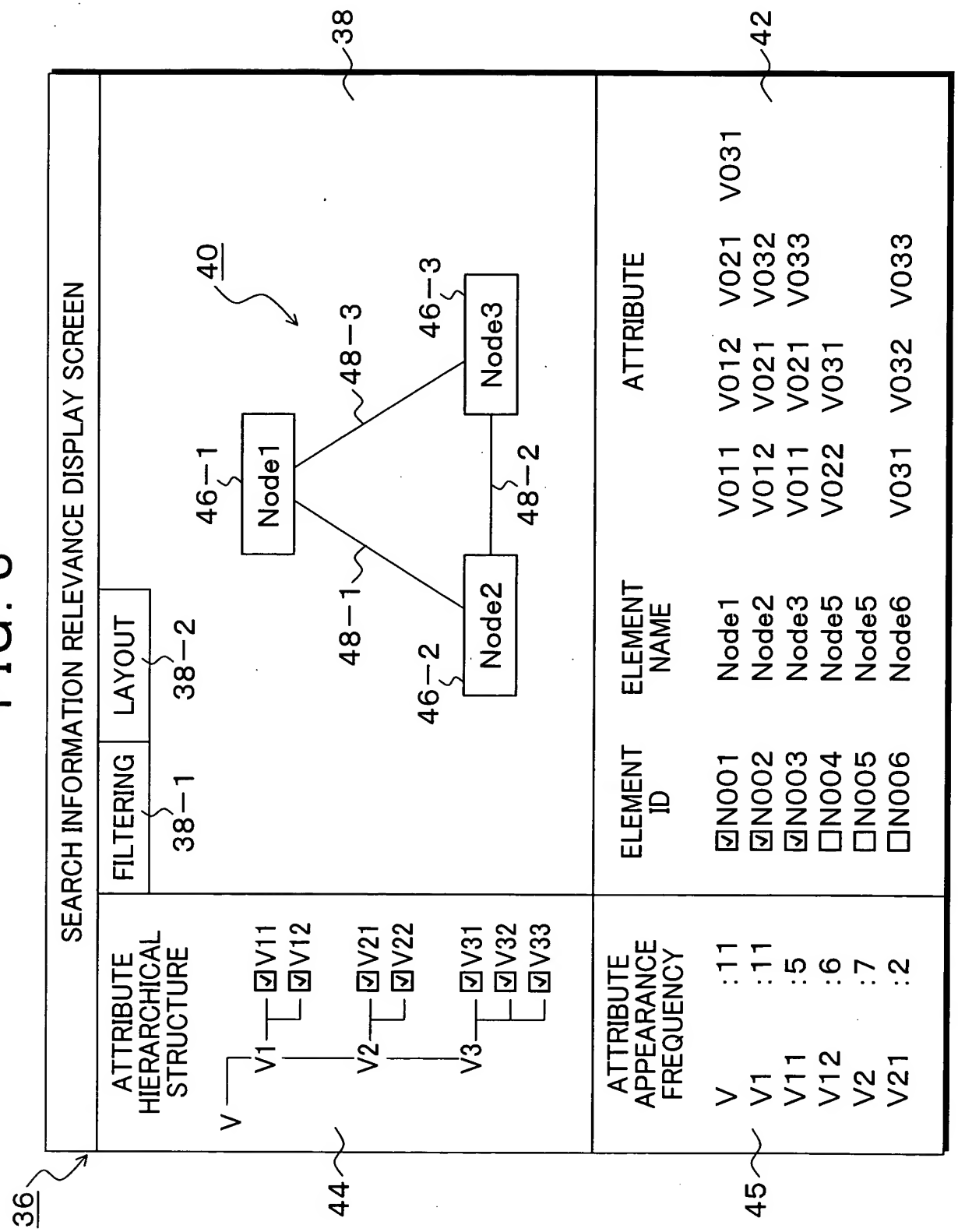

36
SEARCH INFORMATION RELEVANCE DISPLAY SCREEN
38
FILTERING
38-1
LAYOUT
38-2
40
46-1
Node1
48-3
46-3
Node3
48-1
48-2
46-2
Node2
44
ATTRIBUTE HIERARCHICAL STRUCTURE
V
V1
V11
V12
V2
V21
V22
V3
V31
V32
V33
45
ATTRIBUTE APPEARANCE FREQUENCY
V :11
V1 :11
V11 :5
V12 :6
V2 :7
V21 :2
42
ELEMENT ID
ELEMENT NAME
ATTRIBUTE
N001 Node1 V011 V012 V021 V031
N002 Node2 V012 V021 V032
N003 Node3 V011 V021 V033
N004 Node5 V022 V031
N005 Node5
N006 Node6 V031 V032 V033

FIG. 4

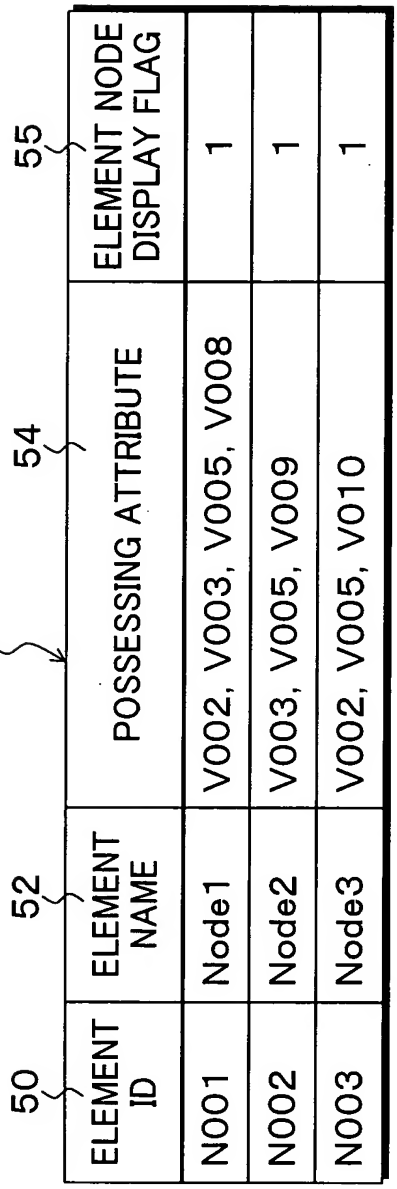

16
50
52
54
55
ELEMENT ID
ELEMENT NAME
POSSESSING ATTRIBUTE
ELEMENT NODE DISPLAY FLAG
N001
Node1
V002, V003, V005, V008
1
N002
Node2
V003, V005, V009
1
N003
Node3
V002, V005, V010
1

FIG. 5

18

56 ATTRIBUTE ID	58 ATTRIBUTE NAME	60 END FLAG	62 PARENT ATTRIBUTE	63 ATTRIBUTE INFORMATION SEARCH FLAG	64 ATTRIBUTE NODE DISPLAY FLAG
V000	V	0		0	0
V001	V1	0	V000	0	0
V002	V11	1	V001	1	1
V003	V12	1	V001	1	1
V004	V2	0	V000	0	0
V005	V21	1	V004	1	1
V006	V22	1	V004	0	0
V007	V3	0	V000	0	0
V008	V31	1	V007	1	0
V009	V32	1	V007	1	0
V010	V33	1	V007	1	0

FIG. 6

20

65 RELEVANCE ID	66 FROM (CONNECTION SOURCE NODE)	68 TO (CONNECTION DESTINATION NODE)	70 COMMON ATTRIBUTE ID	72 EDGE DISPLAY FLAG	74 EDGE COUPLING STRENGTH
R001	N001	N002	V003, V005	0	2
R002	N001	N003	V002, V005	0	2
R003	N002	N003	V005	0	1
R004	V003	N001		1	1
R005	V003	N002		1	1
R006	V005	N001		1	1
R007	V005	N002		1	1
R008	V005	N003		1	1
R009	V002	V003		1	1
R010	V002	V005		1	0.5
R011	V003	V005		1	0.5

FIG. 7

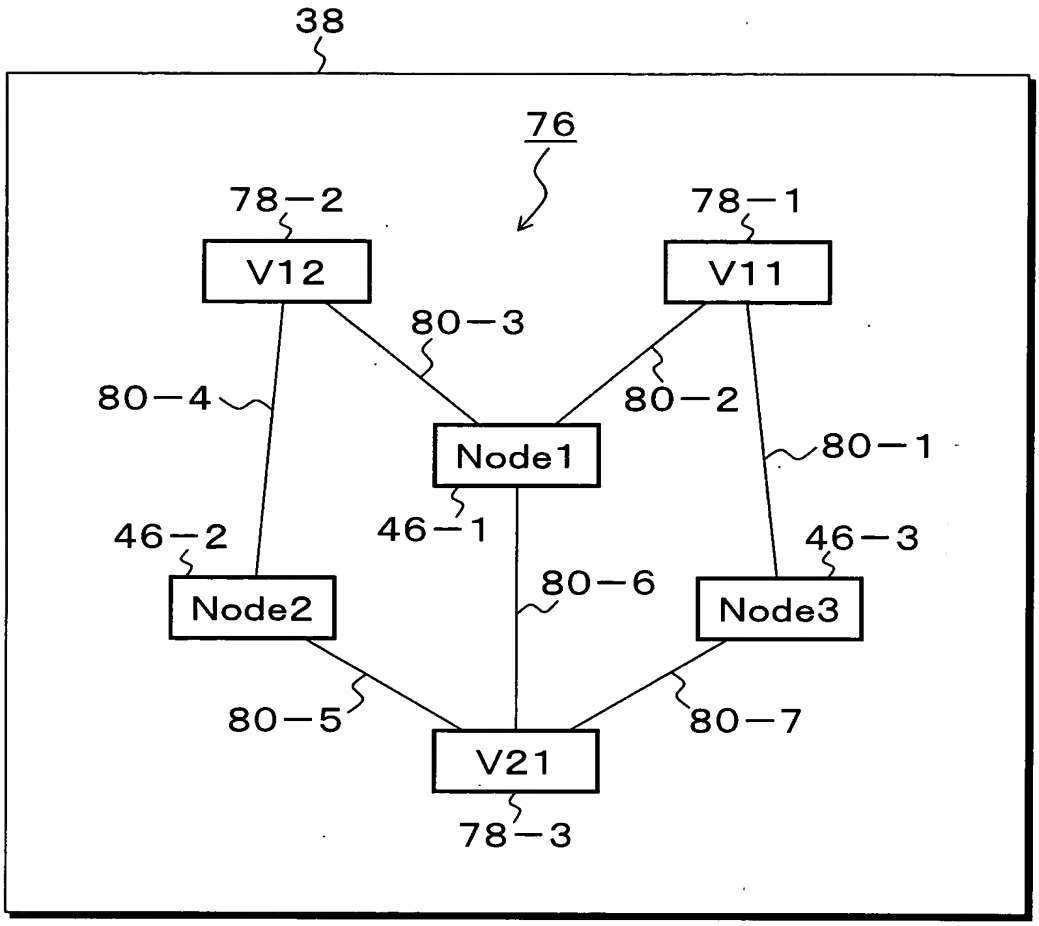

38
76
78−2
V12
78−1
V11
80−3
80−4
80−2
80−1
Node1
46−1
46−2
46−3
80−6
Node2
Node3
80−5
80−7
V21
78−3

FIG. 8

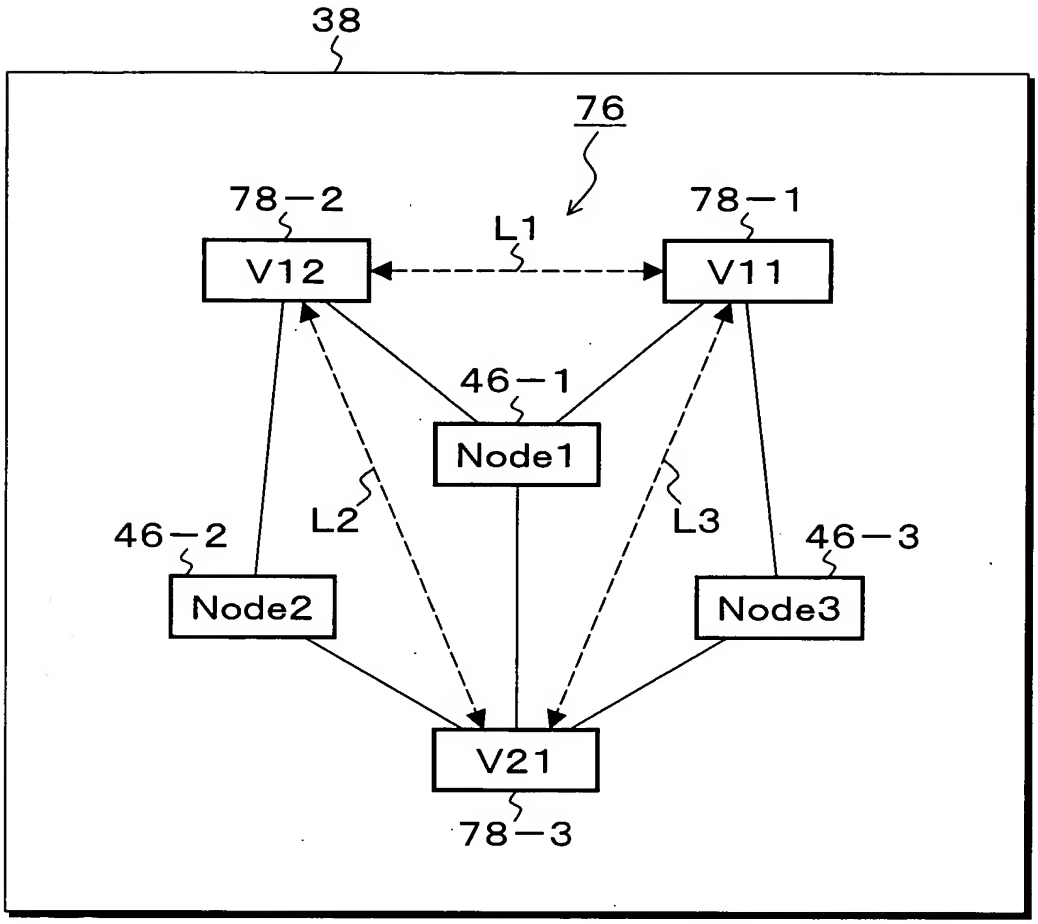

38
76
78−2
78−1
L1
V12
V11
46−1
Node1
L2
L3
46−2
46−3
Node2
Node3
V21
78−3

FIG. 9

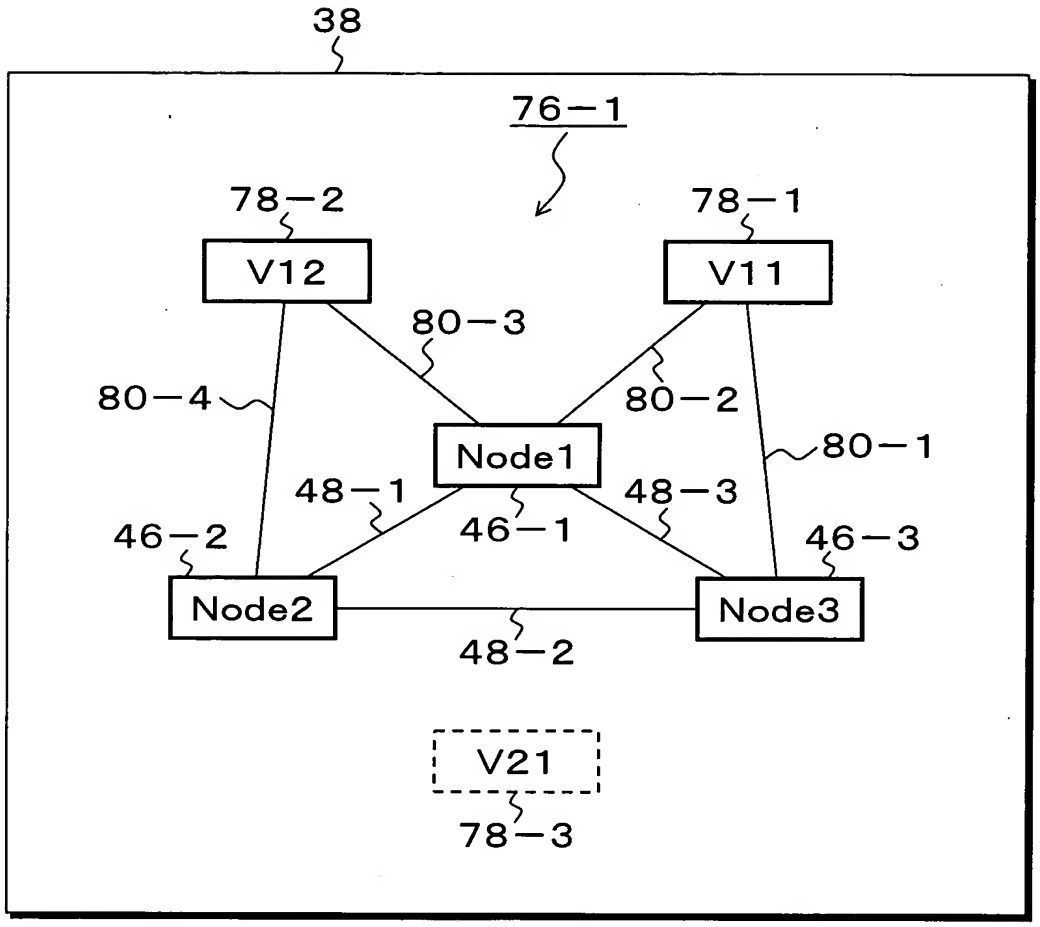

38
76−1
78−2
78−1
V12
V11
80−3
80−4
80−2
80−1
Node1
48−1
48−3
46−1
46−2
46−3
Node2
Node3
48−2
V21
78−3

FIG. 10

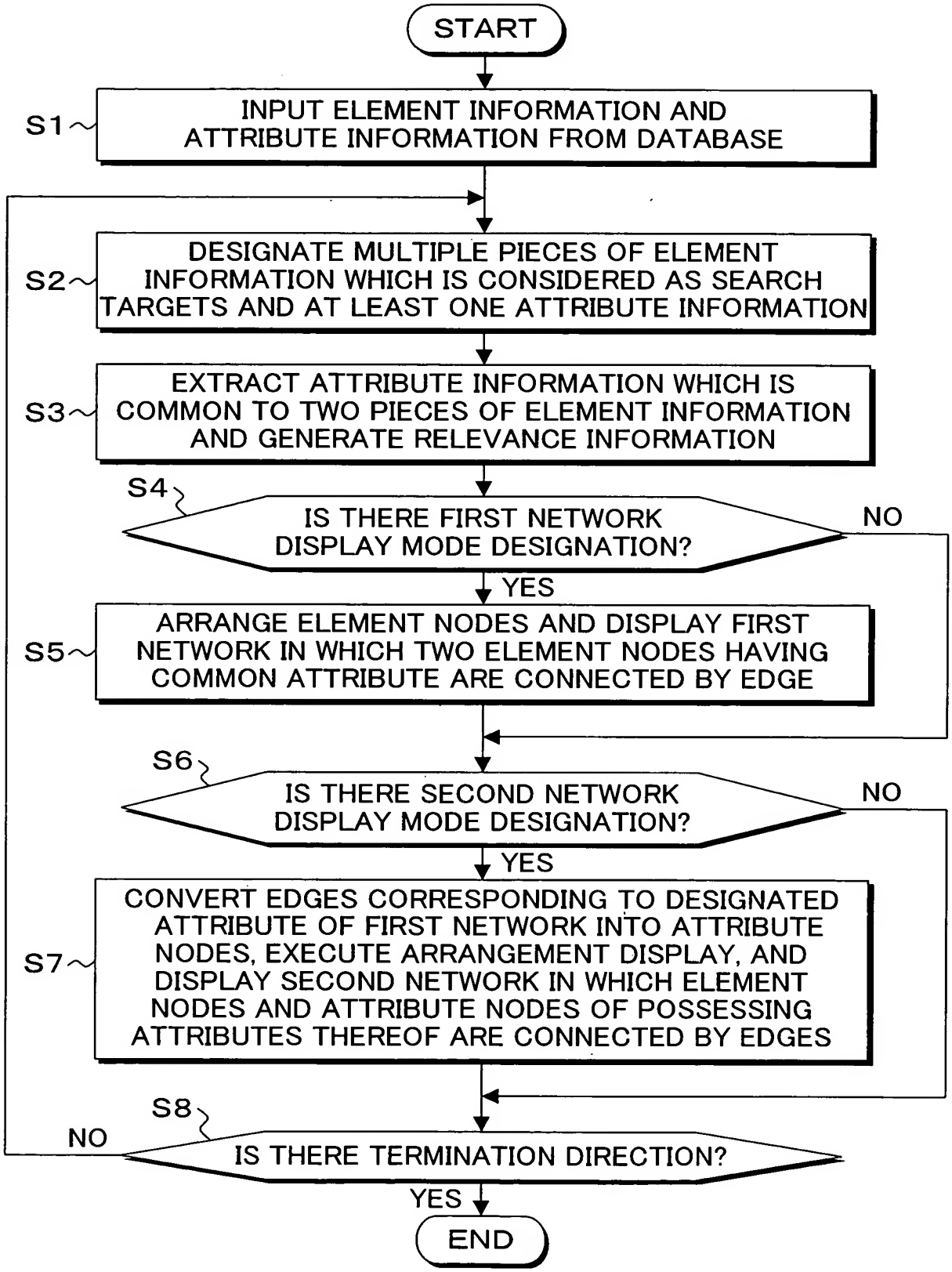

START
S1
INPUT ELEMENT INFORMATION AND ATTRIBUTE INFORMATION FROM DATABASE
S2
DESIGNATE MULTIPLE PIECES OF ELEMENT INFORMATION WHICH IS CONSIDERED AS SEARCH TARGETS AND AT LEAST ONE ATTRIBUTE INFORMATION
S3
EXTRACT ATTRIBUTE INFORMATION WHICH IS COMMON TO TWO PIECES OF ELEMENT INFORMATION AND GENERATE RELEVANCE INFORMATION
S4
IS THERE FIRST NETWORK DISPLAY MODE DESIGNATION?
NO
YES
S5
ARRANGE ELEMENT NODES AND DISPLAY FIRST NETWORK IN WHICH TWO ELEMENT NODES HAVING COMMON ATTRIBUTE ARE CONNECTED BY EDGE
S6
IS THERE SECOND NETWORK DISPLAY MODE DESIGNATION?
NO
YES
S7
CONVERT EDGES CORRESPONDING TO DESIGNATED ATTRIBUTE OF FIRST NETWORK INTO ATTRIBUTE NODES, EXECUTE ARRANGEMENT DISPLAY, AND DISPLAY SECOND NETWORK IN WHICH ELEMENT NODES AND ATTRIBUTE NODES OF POSSESSING ATTRIBUTES THEREOF ARE CONNECTED BY EDGES
S8
NO
IS THERE TERMINATION DIRECTION?
YES
END

FIG. 11

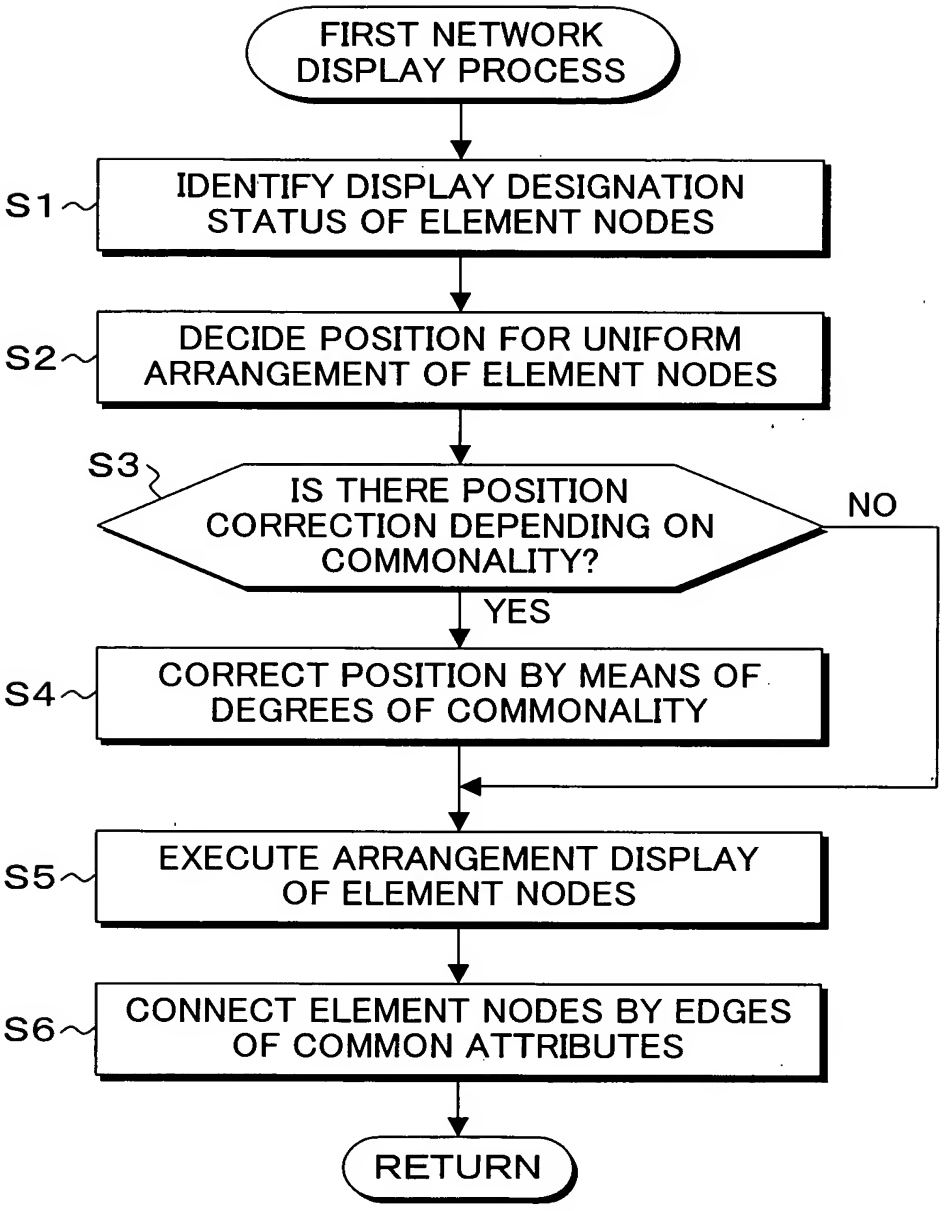

FIRST NETWORK DISPLAY PROCESS
S1
IDENTIFY DISPLAY DESIGNATION STATUS OF ELEMENT NODES
S2
DECIDE POSITION FOR UNIFORM ARRANGEMENT OF ELEMENT NODES
S3
IS THERE POSITION CORRECTION DEPENDING ON COMMONALITY?
NO
YES
S4
CORRECT POSITION BY MEANS OF DEGREES OF COMMONALITY
S5
EXECUTE ARRANGEMENT DISPLAY OF ELEMENT NODES
S6
CONNECT ELEMENT NODES BY EDGES OF COMMON ATTRIBUTES
RETURN

FIG. 12

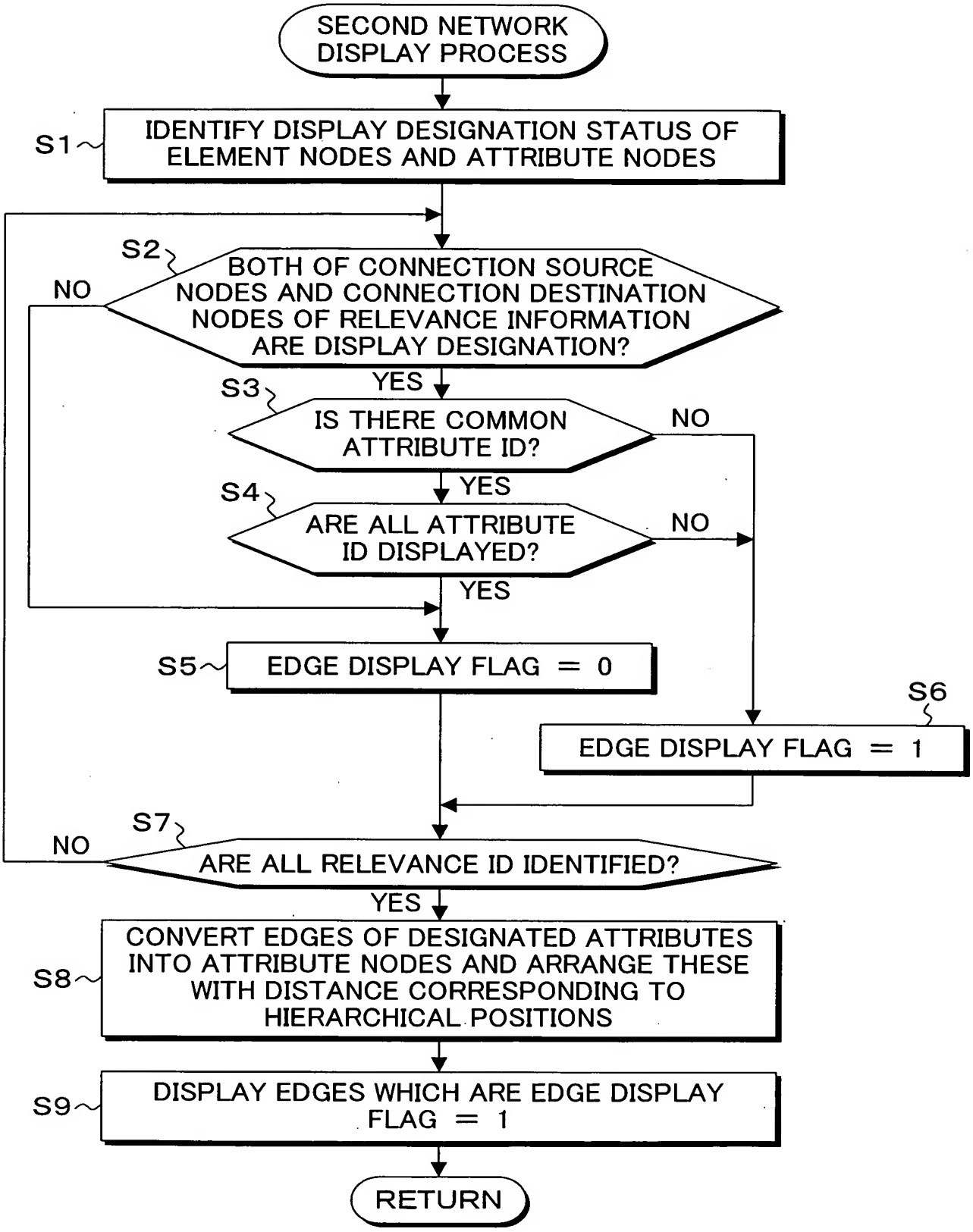

SECOND NETWORK DISPLAY PROCESS
S1
IDENTIFY DISPLAY DESIGNATION STATUS OF ELEMENT NODES AND ATTRIBUTE NODES
S2
BOTH OF CONNECTION SOURCE NODES AND CONNECTION DESTINATION NODES OF RELEVANCE INFORMATION ARE DISPLAY DESIGNATION?
NO
YES
S3
IS THERE COMMON ATTRIBUTE ID?
NO
YES
S4
ARE ALL ATTRIBUTE ID DISPLAYED?
NO
YES
S5
EDGE DISPLAY FLAG = 0
S6
EDGE DISPLAY FLAG = 1
S7
ARE ALL RELEVANCE ID IDENTIFIED?
NO
YES
S8
CONVERT EDGES OF DESIGNATED ATTRIBUTES INTO ATTRIBUTE NODES AND ARRANGE THESE WITH DISTANCE CORRESPONDING TO HIERARCHICAL POSITIONS
S9
DISPLAY EDGES WHICH ARE EDGE DISPLAY FLAG = 1
RETURN

FIG. 13

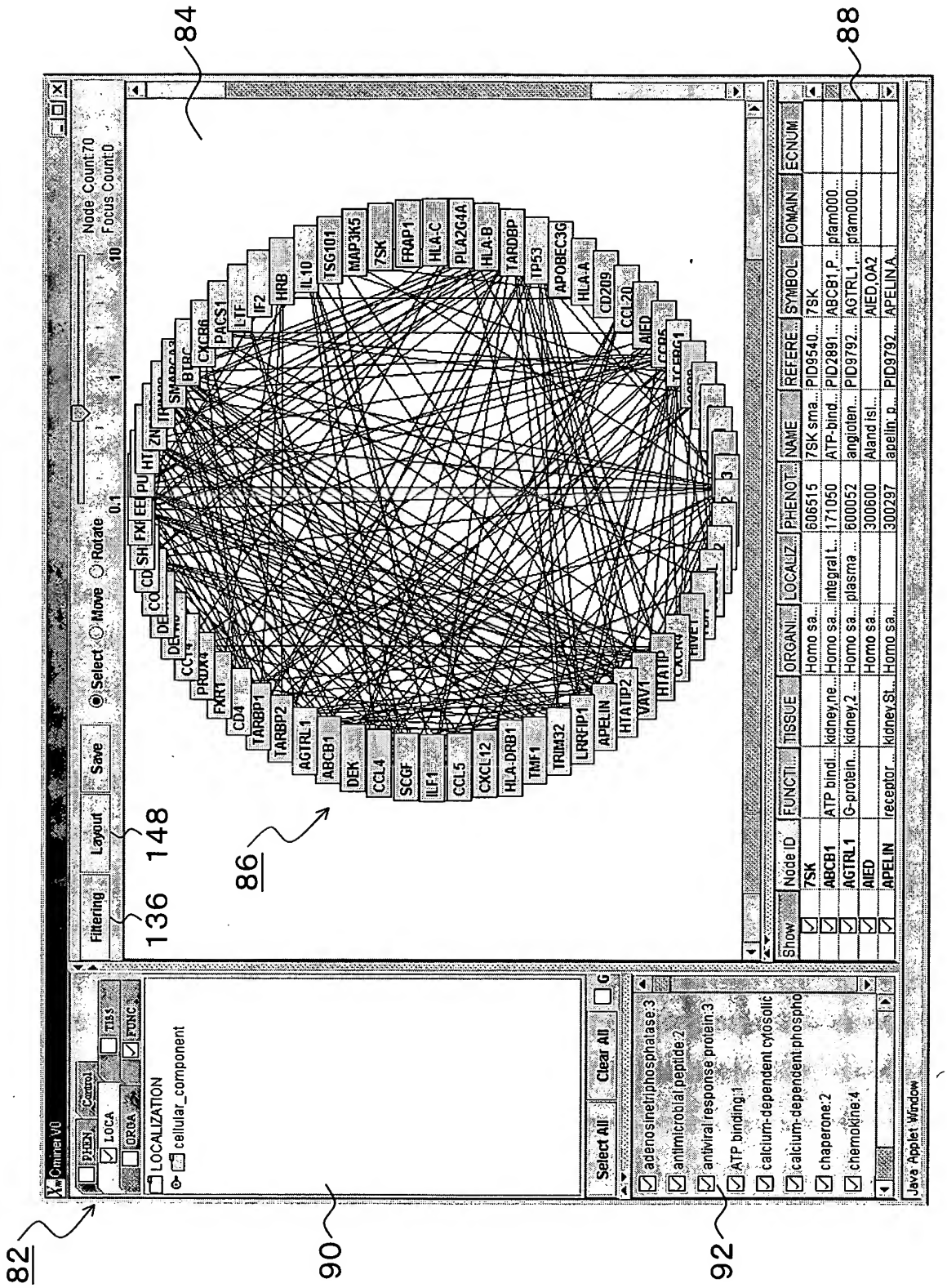

82
84
86
88
90
92
136
148
Filtering
Layout
Save
Select
Move
Rotate
Node Count:70
Focus Count:0
LOCALIZATION
cellular_component
Select All
Clear All
Show
Node ID
FUNCTI...
TISSUE
ORGANI...
LOCALIZ...
PHENOT...
NAME
REFERE...
SYMBOL
DOMAIN
ECNUM
7SK
ABCB1
AGTRL1
AIED
APELIN
ATP bindi...
G-protein...
receptor ...
kidney,ne...
kidney,2 ...
kidney,St...
integral t...
plasma ...
Aland Isl...
apelin p...
PID9540...
PID2891...
PID9792...
7SK sma...
ATP-bind...
angioten...
ABCB1_P...
AGTRL1_...
APELIN A...
pfam000...
aderosinetriphosphatase:3
antimicrobial peptide:2
antiviral response protein:3
ATP binding:1
calcium-dependent cytosolic
calcium-dependent phospho
chaperone:2
chemokine:4
Java Applet Window

FIG. 14

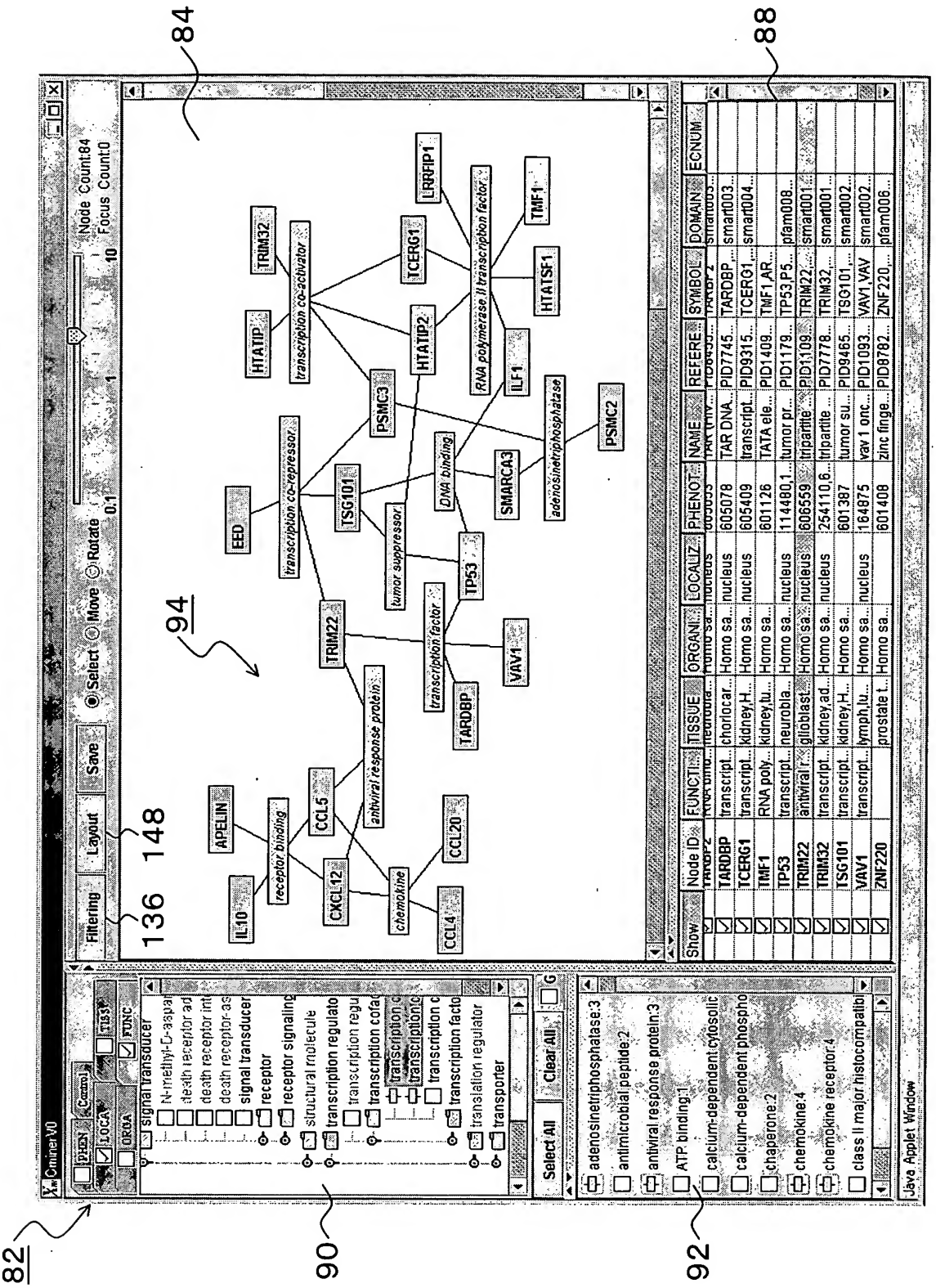
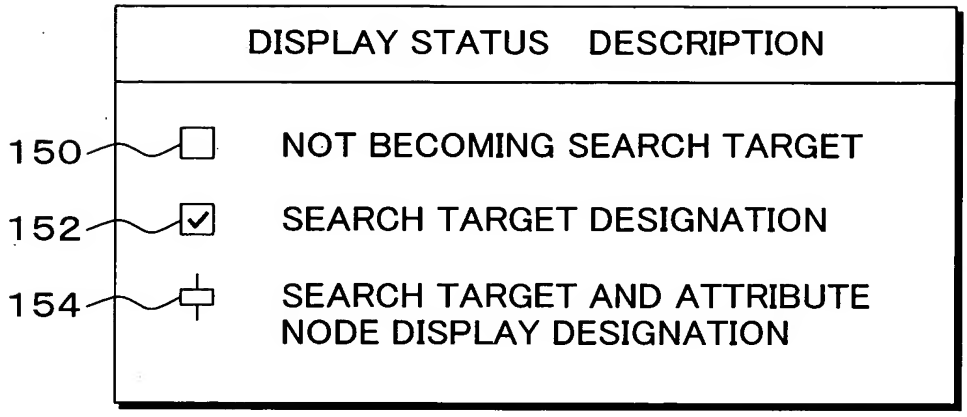

82
84
88
90
92
94
136
148
Filtering
Layout
Save
Select
Move
Rotate
Node Count:84
Focus Count:0
Show
Node ID
FUNCTI...
TISSUE
ORGANI...
LOCALIZ...
PHENOT...
NAME
REFERE...
SYMBOL
DOMAIN
ECNUM
TARDBP
TCERG1
TMF1
TP53
TRIM22
TRIM32
TSG101
VAV1
ZNF220
Select All
Clear All
Java Applet Window

FIG. 15


DISPLAY STATUS DESCRIPTION
150
NOT BECOMING SEARCH TARGET
152
SEARCH TARGET DESIGNATION
154
SEARCH TARGET AND ATTRIBUTE NODE DISPLAY DESIGNATION